MINEC®

Minec 4x
User Handbook

user handbook

Welcome as a Minec 4x user!

The Minec 4x, a Swedish developed hand-held terminal, incorporates the latest semiconductor technology. The Minec 4x is functional, compact and ergonomically designed, and sufficiently robust to withstand a wide variety of environments and working conditions.

This handbook provides a general description of your new hand-held terminal. We recommend you to read it carefully. In addition to this handbook you will normally have a separate description of your particular application program if Minec AB has written the application.

We are certain that you will find your new hand-held terminal extremely useful. You are welcome to contact Minec at the address below if you have any questions about the Minec 4x hand-held or the terminal systems.

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The serial number of your Minec 4x is shown on a label on the terminal and is also programmed into the system file. Please write your serial number here for future reference (technical support, insurance claims etc.)

Serial no:	
Windows CE license no:	
Date of purchase:	

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The Minec 4x has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

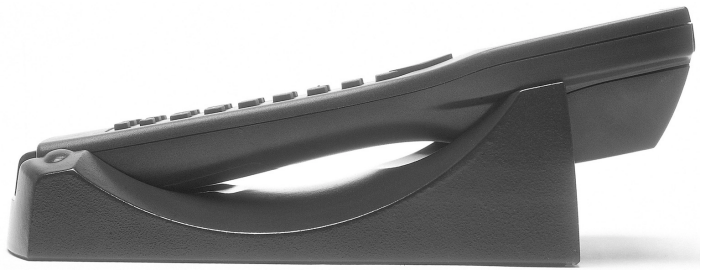
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

1. Minec 4x

The Minec 4x terminal is a hand-held computer that may read a number of RFID tags and the most commonly used types of barcodes. Minec 4x may also be used as a pure keyboard entry device with communication via IrDA, RS232, GSM/GPRS or RadioLAN. It is specifically designed to handle demanding applications and endure harsh environments and has therefore an IP64 encapsulation level.

Minec 4x is developed to simplify data collection in processes where a lot of data information needs to be stored or handled on the terminal. The Minec 4x includes these functionalities:

- Minec 4x has easily exchangeable modules that can read barcodes via Laser and/or read RFID tags at LF (125 kHz) and HF (13.56 MHz), for example SmartLabels and Mifare cards.
- Minec 4x has a built-in rechargeable Li-ION battery to be charged with the supplied charger or via the docking cradle. At normal usage, 8 hours/day, the operation time is about one week between battery chargings, but depends very much on the application. An empty battery is fully charged in 3 hours.
- A Compact Flash slot for type I or II is available to feature extra functionality such as memory extension, RadioLAN or Bluetooth communication. The CF card must support 3.3V.
- Communication from the hand-held to a PC is possible via IrDA as standard. Optionally communication can also be performed via RS232, GSM/GPRS or the functionality of the Compact Flash card.
- A choice between two operating systems is possible - Windows CE version 3.0 or Linux 2.4.0. Application programming can be made in Visual Basic or C++ for Windows CE and in C++ for Linux.



On Delivery

Once you have taken the terminal out of its box, check immediately that there are no visible signs of transport damage.

Minec 4x is provided complete with a rechargeable Li-ION battery and is ready to use (for GSM you will need a SIM card). However, it is a good idea to recharge the battery for at least 1 hour before you start using the terminal.

Getting Started

Start by becoming familiar with the various parts of Minec 4x. The Minec 4x is held and operated by the same hand. Place the terminal (still switched off) in the palm of one hand and practice pressing the number keys with your thumb.

If you have a GSM module to the Minec 4x, a subscription at a mobile phone operator is needed. The operator will provide you with a SIM card, among other things.

Application Programming

The listed programs below are needed for the application programming. All programs are available on the CD-ROM provided with the development kit.

Windows CE

A full instruction of how to install and setup the listed programs is presented in the Installation chapter of the Programmer´s Guide for Windows CE (ProgGuide WinCE.PDF). The document is available on the CD-ROM and the Minec AB web site. Be sure to install the programs in the specified order!

1. Configure IR-functionality on the PC for Minec 4x docking cradle, if used.
2. Install Microsoft ActiveSync.
3. Install Microsoft eMbedded Visual Tools (for Visual Basic, Visual C++ or both).
4. Install Minec 4x SDK for WinCE (for Visual Basic and C++)
5. Install the documentation needed for application programming.

Linux

A full instruction of how to install and setup the listed programs is presented in the Installation chapter of the SDK4xLinux manual (SDK4xLinux.PDF). The document is available on the CD-ROM and the Minec AB web site.

1. Install Cygwin. Enables Unix-like functionality on a Windows computer.
2. Install Minec 4x Tool Chain. It includes the Minec 4x SDK with BinUtils, GCC and C++ compiler.
3. Install the documentation needed for application programming.

Keyboard

Both keyboard and display may be backlit if operating in dark environments. The backlight feature is turned on or off by pressing the ON key shortly. It is automatically turned off when the Minec 4x is powered off. Note that pressing the ON key for as long as 0.5 second will power off the hand-held!

Layout of the keyboard is presented on the next page. Any special features for the keys are described in your application program documentation.

Key(s) pressed	Event
ALT + Delete + ON simultaneously	Makes a warm boot of the Minec 4x if keys are pressed for 0.5 second. Settings in the RAM memory will not be erased.
ENTER + ESC + ALT + ON simultaneously	WinCE must be running to perform this cold boot. RAM settings will be erased. Same reset process as pressing the reset button.
ALT + arrow simultaneously	Adjusts the display contrast. The up arrow increases the contrast (makes it darker), while down decreases the contrast.
Windows CE specific key(s)	**Windows CE specific event**
TAB, then ENTER	Opens the Start-menu if desktop is shown.
ALT + TAB simultaneously	Opens the Task Manager. Here you can switch between the running programs.
SHIFT	SHIFT together with another key produces specific symbols. Produces a capital letter if simultaneously pressing two other keys. If the SHIFT key is pressed alone it works like the CapsLock key on a PC.
ALT	ALT together with another key produces specific symbols. The ALT key alone opens the present menu.
Linux specific key(s)	**Linux specific event**
SHIFT	Toggles SHIFT Lock if pressed alone.
ALT	Toggles ALT Lock if pressed alone.

ENTER

This is equivalent to the ENTER key on a PC. Used to confirm data or to scroll to the next menu choice.

DEL

Equivalent to a PC Backspace key. Deletes the previous character.

Arrow Keys

To move forwards and backwards in text fields.

F1–F3

Function keys that provide different functions depending on the application pro gram.

ALT

The ALT key alone opens the present menu. System key codes are generated by pressing the ALT key and another key simultaneously.

Entering Letters

The method used to enter letters is both simple and unique (patent pending) - you press two adjacent keys at the same time. If you wish to enter the letter “K” for example, you will find this letter between key “1” and “2”. So simply press these two keys simultaneously and the letter “K” will be presented on the display.

SCAN

Scan and navigation key. Activates the laser scanner or RFID tag reader. The navigation “arrows” are used to browse between fields or in menus.

ESC

This is the equivalent of the Escape key on a PC, and is used to discontinue data entry or to return to the previous menu. Simplified you could say that the Enter key means Yes while Esc means No.

SHIFT

By holding down the Shift key while pressing two other keys, representing a letter, a capital letter is produced. Pressing Shift alone it equals the CapsLock key on a PC keyboard.

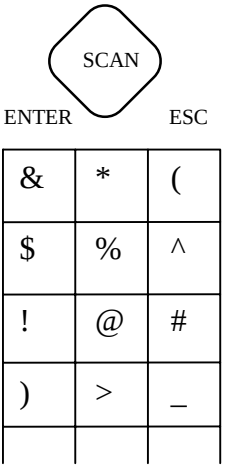
ON/OFF

Press the ON/OFF key to switch the Minec 4x on or off. To turn it off you need to press the key for 0.5 second. To save power the Minec 4x goes into stand-by mode after 5 minutes of inactivity. The ON/OFF key wakes the terminal again. Backlight for the keyboard and display is turned on and off with this key. When the Minec 4x is switched off, the backlight is turned off too.

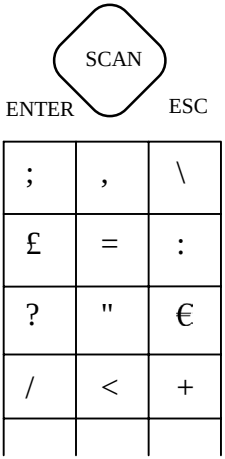
Note! The Minec 4x can´t be switched off while being connected to a network. The terminal will first close the connection and then power off.

Key Combinations

Many special symbols can be entered by using the SHIFT or ALT keys combined with other keys on the keyboard.



Keyboard with SHIFT



Keyboard with ALT

Miscellaneous Characteristics

Reset

If a restart is needed of Minec 4x, there are three options. By pressing the keys ALT, Delete and ON simultaneously for 0.5 second it will close all applications and perform a warm boot, where RAM will not be erased.

ENTER, ESC, ALT and ON keys pressed simultaneously will perform a cold boot which will erase RAM. The operating system must be running to be able to initiate this reset.

The same reboot process is carried out by pressing the reset button, located underneath the battery lid. But this cold boot does not need a running operating system to be initiated. Note that the button should be pressed with a non-conductive device, e.g. a plastic toothpick. The location of the reset button is shown in the Battery Functionality chapter.

Display

The Minec 4x has a LCD backlit display. You can set the contrast up to 64 steps by pressing, in WinCE the ALT key and the arrows up or down at the same time. In Linux the SHIFT key is pressed first, then the navigation key up or down. Up gives more contrast (a darker display), while down renders less. Characters on the screen can be clearly read in all light conditions. The display is fully graphic, which means figures and symbols can be shown in 16 steps of grey scale. You may display 20 lines with 30 characters / line, but default is eight lines with 20 characters.

LED

Under the display there are two diodes. The red one on the right indicates that the battery is being recharged and can be programmed from the application. For example, it can be good to use to replace the buzzer in noisy environments. The green diode on the left blinks when the Minec 4x is in suspend mode (not turned off but the display is blank). It also indicates that the GSM is searching for a basestation or has connected to a network.

Compact Flash

If the Compact Flash card is installed at delivery, it should not be removed or changed by the end-user. The card is located under the module cover.

Sound

A small slit is located below the keyboard. From here the built-in buzzer lets out a sound that can be programmed to different frequencies and time intervals.

Recharging via cord

Headset connector

IrDA

Recharging via cradle

IrDA

At the bottom end of the terminal the IrDA sensors are located. These are infrared (IR) sensors used to transfer programs and data to and from the docking cradle. Data can also be directly transfered to a PC, mobile printer or device holding an interface that conforms to the IrDA standard.

As an IrDA connection employs infrared light, an unobstructed line of sight is required between the IR-windows of the different units. IR-windows also have a limited angle of vision, about 30°, therefore it is important to place the units correctly in relation to the other. Best results are achieved at a distance of 5 to 20 cm between units, and the smallest possible angle of deviation, although communication is possible up to a distance of 1 meter.

If the IrDA link does not work, the reason may be among the following:

1. Bright ambient light (sunlight, fluorescent light etc.) can sometimes dazzle the IrDA receiver.
2. The beam of IrDA light is obscured by some object.
3. The distance between the IR devices is too great.
4. The angle between the IR devices is incorrect.
5. The IR windows are dirty, scratched or damaged.
6. Interference from another IR-source (TV remote control etc.).
7. Software in the two units is not compatible.

SIM Card

Note ! The encapsulation level may not be maintained if Minec 4x is taken apart by others than qualified service personnel. For maintained encapsulation level, send SIM card and hand-held to Minec AB for installation.

The GSM module needs a SIM card to be installed into the Minec 4x prior to operation. To install the SIM card, please follow these directions, if you allow the encapsulation to be broken:

1. Switch off the Minec 4x.
2. Remove battery lid on the back of the hand-held.
3. Place the Minec 4x keyboard face down.
4. Gently pull out the battery contact and then remove the battery itself.
5. Open the SIM card tray. Place the SIM card carefully on the tray, connector area facing down, and close the tray. Make sure the tray is locked.
6. Put the battery back in its place and connect the battery contact.
7. Put the battery cover on and screw tight.

2. Exchangeable Modules

An exchangeable module is fitted at the top of the Minec 4x behind the display. This module can contain different accessories to make your work with the Minec 4x easier. On delivery the hand-held is fitted with the module that has been ordered. Should your requirements change, the Minec 4x terminal can be sent in and the existing module can be replaced by another. A switch to another module usually requires changes to the application program as well.

Note ! Do not try to dissemble the Minec 4x yourself. The encapsulation level may not be maintained if the hand-held is taken apart by others than qualified service personnel.

Most of the modules are described below. However, new modules are being developed all the time and there are separate manuals for the latest additions.

RS232 module

This module has a 6-pin Hirose port for connection via a special cable to a PC or printer. Communication is controlled by the application program in the Minec 4x. Signal levels in the port meets the standard RS232 protocol.

Laser module

This module has a built-in laser scanner that makes it possible to read barcodes from a distance (the actual distance depends on factors such as the size of the barcode).

The application program controls the way this module is used. The laser is usually activated by pressing the SCAN key. The laser remains on until an approved code has been read by the Minec 4x or until a pre-programmed time (usually 5 seconds) has passed.

RFID module (5 models)

When fitted with an RFID module (Radio Frequency IDentification) the Minec 4x can read and write tags. An RFID tag may take the form of e.g. a little disc, credit card or a thin adhesive label.

A tag contains a small antenna and an electronic circuit with a memory. The RFID module transmits a weak radio signal to the tag which takes its power from the radio signal and sends a signal back to the RFID module.

RFID tags are available in many different versions, from the simplest which only store a serial number, to the most advanced, which can store 2 kbits or more of data. They often incorporate a protection system such as a password or encryption to prevent unauthorized access. Different radio frequencies and methods of modulation are also used. This is why it is important to select the right type of tag for a tag-based system to be successful.

These different RFID modules are available for Minec 4x:

- RFID LF module (125kHz), reads and writes all commonly used low frequency tags.
- RFID HF ISO module (13.56 MHz), reads and writes high frequency tags, such as I•Code (Philips Semiconductor), Tag-it (Texas Instruments), Tag-it ISO 15693, Folio (Gemplus), Pico tag (Inside), V720 (OMRON), MCRF 355 and MCRF360 tags (Microchip).
- RFID HF S002 module (13.56 MHz), reads and writes high frequency tags, such as I•Code (Philips Semiconductor), Tag-it (Texas Instruments), ISO 15693 and TagSys tags.
- RFID HF A22 module (13.56 MHz), reads and/or writes high frequency tags, such as I•Code (Philips Semiconductor), Tag-it (Texas Instruments), Tag-it ISO 15693, ISO 15693, ISO 14443A, ISO14443B, My-d SRF55V10P, SRF55V02P, SRF55VxxS and Mifare Classic, Pro, ProX, Light and SLE66CL160S(A;B) tags.
- RFID Mifare module (13.56 MHz), reads and writes contactless smart cards based on the Mifare technology from Philips. The Mifare module reads cards on the ISO14443A and B standards. These cards are also protected by an advanced encryption and password system.

Laser/RFID module

All RFID modules can be combined with a Laser scanner if the extended data capture functionality is needed.

3. Communication Options

GSM/GPRS

Both data and speech communication via GSM or GPRS can be performed with Minec 4x. It works on a dual band (GSM11.20;ETS300607-11.10) with 900/1800 (900/1900 option). A headset connector is available for speech. The data rate is up to 9,600 bps for sending data and 28,800 bps for receiving. Messages via SMS can be sent and received as well. Application programming is controlled by standard AT commands.

RadioLAN

Communication via RadioLAN, or Wireless LAN, is sent over 2.4 GHz via a standard Compact Flash card. The RadioLAN communication is designed to meet IEEE802.11B.

Bluetooth

Communication wirelessly at short distances can be obtained by using the Bluetooth module. It is available via a standard Compact Flash card.

RS232

On the module head a 6-pin Hirose connector can be mounted at delivery to obtain RS232 communication. The cable can be connected to a PC, printer or modem.

IrDA

Infrared (IR) light is transfered as short pulses to make IR communication possible. Via the two infrared sensors at the bottom end of the Minec 4x data can be sent to and from a PC or printer that conforms to the IrDA standard. The Minec 4x Docking Cradle also communicates with the terminal via IrDA.

4. Accessories

You may have ordered an accessory together with your Minec 4x hand-held to enhance the terminal functionality.

Docking Cradle

The Docking Cradle eliminates the need to connect and disconnect a cable every time serial communication takes place. The cradle is permanently connected to a PC via a cable, and the Minec 4x is simply placed in the cradle when a communication connection is required.

Data information can be sent to a printer or modem via the PC.

Recharging the Minec 4x battery will be performed while placed in the cradle.

Two LEDs will indicate if the battery is charging, power is on and if data transfer is being performed to or from the hand-held.

Mains Adapter

An AC mains adapter capable of supplying a minimum of 700 mA at 8V DC can be connected to the power connector on the back of the docking cradle.

Printer or Modem

A printer or modem, that can communicate via IrDA, can receive information directly from the Minec 4x. Printers with an RS232 connection can also communicate via the RS232 port of the Minec 4x.

If a docking cradle is used, data can be sent to a printer via the RS232 connector.

5. Battery Functionality

The Minec 4x is powered by one rechargeable Li-ION battery.

Battery Recharging

How often the battery has to be recharged depends on the application. It is a good habit to connect the Minec 4x to a charger every night. The provided charger will recharge an empty battery in 3 hours.

From the application program you can control the red LED, located under the display. While recharging the battery the red diode will shine with a steady light. When the battery is fully charged the LED flashes slowly (0.5 second on, 3.5 seconds off). Normally the LED does not need to be observed, but it can help if a problem is suspected.

At the bottom of the display an indicator is shown that presents the battery status. If the battery indicator is all black, the battery is fully charged and if the indicator is e.g. only filled to 25 %, the battery has a quarter of its power left.

If you do not recharge the battery it will finally be impossible to switch on the terminal. However, a back-up of the collected data is saved continuously to the Flash disk. Then recharge the battery and upload the collected data from the Flash disk before using the Minec 4x as usual.

You may use the terminal while recharging the batteries. However, you need to recharge the batteries for at least 15 minutes before using the mobile phone function while recharging.

CAUTION !
RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.
DISPOSE OF BATTERIES ACCORDING TO THE BATTERY MANUFACTURER´S INSTRUCTIONS.

Battery Replacement

It is unlikely that you have to replace the battery, but if needed, please contact Minec AB. The battery may be exchanged by trained personnel at Minec AB.

Note ! The encapsulation seal is broken when opening the battery cover and may not be restored after putting the cover back. Make sure only qualified service personnel may dissemble or assemble the Minec 4x.

6. Troubleshooting

Note ! Do not open the module head. Minec AB can not guarantee that the encapsulation level is maintained after the hand-held is dissembled by others than qualified service personnel.

Problem	Action
The application program has frozen or is behaving strangely.	Restart the Minec 4x by pressing the ALT, Delete and ON keys simultaneously for 0.5 second.
It is impossible to switch on the Minec 4x terminal.	Press the reset keys as above. If no change, connect the charger for at least 10 minutes, then switch on. If the terminal starts, charge the battery for at least 1 hour.
Communication via the Docking Cradle does not work.	Check that the Minec 4x is correctly placed in the cradle, i.e. that the terminal body is hard down against the stops in the cradle. Make sure that the green LED on the cradle indicates that the power is on. Also check that the cords are correctly plugged in.
No connection with GSM base station.	Make sure the signal from the GSM net is strong. Check that the SIM card is properly installed. Check the software application.

7. Declaration of Conformity

MINEC®

dichiara che
declares that the
déclare que le
bescheinigt, daß die Geräte
declara que el

Minec 4x Standard
Minec 4x Laser
Minec 4x Laser RS232
Minec 4x Docking Cradle

sono conformi alle Direttive del Consiglio Europeo sottoelencate:
are in conformance with the requirements of the European Council Directives listed below:
sont conforme aux spécifications des Directives de l'Union Européenne ci-dessous:
der nachstehend angeführten Direktiven des Europäischen Rats:
cumple con los requisitos de las Directivas del Consejo Europeo, según la lista siguiente:

89/336/EEC	EMC Directive
92/31/EEC	EMC Directive
73/23/EEC	Low Voltage Directive

Basate sulle legislazioni degli Stati membri in relazione alla compatibilità elettromagnetica ed alla sicurezza dei prodotti.
On the approximation of the laws of Member States relating to electromagnetic compatibility and product safety.
Basée sur la législation des Etats membres relative à la compatibilité électromagnétique et à la sécurité des produits.
Über die Annäherung der Gesetze der Mitgliedsstaaten in bezug auf elektromagnetische Verträglichkeit und Produktsicherheit entsprechen.
Basado en la aproximación de las leyes de los Países Miembros respecto a la compatibilidad electromagnética y las Medidas de seguridad relativas al producto.

Questa dichiarazione è basata sulla conformità dei prodotti alle norme seguenti:
This declaration is based upon compliance of the products to the following standards:
Cette déclaration repose sur la conformité des produits aux normes suivantes:
Diese Erklärung basiert darauf, daß das Produkt den folgenden Normen entspricht:
Esta declaración se basa en el cumplimiento de los productos con la siguientes normas:

EN 55022-B	RF Emissions Control
EN 50081-1	Emission to Electromagnetic Disturbance
EN 55024	Immunity to Electromagnetic Disturbance
EN 60825	Radiation Safety of laser products
EN 60950	Product Safety

Stockholm, Sweden, 2002-08-01

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Secondary Unit - Minec AB
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CE

8. Care and Maintenance

The Minec 4x is a top-quality product and normally requires no special maintenance. However, the Minec 4x, in common with other electronic products, should be handled with a certain care.

If you keep the following handling instructions in mind it will be easier to meet guarantee requirements, and at the same time your Minec 4x will give many years of trouble-free use.

- Do not store the Minec 4x under conditions that are too hot or too cold (limits are +60°C and -30°C). Higher temperatures can damage the electronics or battery, or deform plastic parts. Lower temperatures cause condensation when the terminal warms up to normal temperature, which in turn can damage the electronics.

- Do not attempt to take the Minec 4x apart. Leave all service to qualified service personnel.

- Do not expose the Minec 4x to certain liquids or submerge in water. The salts in liquids can damage the electric circuits inside the terminal. If you suspect that damp has entered the Minec 4x you should remove the battery and contact a service centre.

- Do not expose the Minec 4x to shocks. Harsh handling can result in damage to internal circuits.

- Never use solvents or similar liquids to clean the Minec 4x. Use a slightly damp cloth, with a mild soap solution if necessary, to clean the keyboard and display.

Laser Safety

Be sure the laser warning label applied to the terminal is readable at all times. If necessary, replace it with a new one.

English

The following information is provided to comply with the rules imposed by international authorities and refers to the correct use of your terminal.

Standard Laser Safety Regulations

This product conforms to the applicable requirements of both CDRH 21 CFR 1040 and IEC 825-1 at the date of manufacture.

For installation, use and maintenance, it is not necessary to open the device.

CAUTION!

Use of controls or adjustments or performance of procedures other than those specified herein may result in exposure to hazardous visible laser light.

The product utilises a low-power laser diode. Although staring directly at the laser beam momentarily causes no known biological damage, avoid staring at the beam as one would with any very strong light source, such as the sun. Avoid that the laser beam hits the eye of an observer, even through reflective surfaces such as mirrors, etc.

Be sure the laser warning label applied to the terminal is readable at all times. If necessary, replace it with a new one. The laser light is visible to the human eye and is emitted from the laser window.

Italiano

Le seguenti informazioni vengono fornite dietro direttive delle autorità internazionali e si riferiscono all'uso corretto del terminale.

Normative Standard per la Sicurezza Laser

Questo prodotto risulta conforme alle normative vigenti sulla sicurezza laser alla data di produzione: CDRH 21 CFR 1040 e IEC 825-1.

Non si rende mai necessario aprire l'appa-recchio per motivi di installazione, utilizzo o manutenzione.

ATTENZIONE

L'utilizzo di procedure o regolazioni differenti da quelle descritte nella documentazione può provocare un'esposizione pericolosa a luce laser visibile.

Il prodotto utilizza un diodo laser a bassa potenza. Sebbene non siano noti danni riportati dall'occhio umano in seguito ad una esposizione di breve durata, evitare di fissare il raggio laser così come si eviterebbe qualsiasi altra sorgente di luminosità intensa, ad esempio il sole. Evitare inoltre di dirigere il raggio laser negli occhi di un osservatore, anche attraverso superfici riflettenti come gli specchi.

Deutch

Die folgenden Informationen stimmen mit den Sicherheitshinweisen überein, die von internationalen Behörden auferlegt wurden, und sie beziehen sich auf den korrekten Gebrauch vom Terminal.

Norm Für Die Lasersicherheit
Dies Produkt entspricht am Tag der Herstellung den gültigen IEC 825-1 und CDRH 21 CFR 1040 Normen für die Lasersicherheit.

Es ist nicht notwendig, das Gerät wegen Betrieb oder Installations-, und Wartungsarbeiten zu öffnen.

ACHTUNG

Jegliche Änderungen am Gerät sowie Vorgehensweisen, die nicht in dieser Betriebsanleitung beschrieben werden, können ein gefährliches Laserlicht verursachen.

Der Produkt benutzt eine Laserdiode. Obwohl zur Zeit keine Augenschäden von kurzen Einstrahlungen bekannt sind, sollten Sie es vermeiden für längere Zeit in den Laserstrahl zu schauen, genauso wenig wie in starke Lichtquellen (z.B. die Sonne). Vermeiden Sie es, den Laserstrahl weder gegen die Augen eines Beobachters, noch gegen reflektierende Oberflächen zu richten.

Français

Les informations suivantes sont fournies selon les règles fixées par les autorités internationales et se refèrent à une correcte utilisation du terminal.

Normes de Securite Laser
Ce produit est conforme aux normes de sécurité laser en vigueur à sa date de fabrication: CDRH 21 CFR 1040 et IEC 825-1.

Il n'est pas nécessaire d'ouvrir l'appareil pour l'installation, l'utilisation ou l'entretien.

ATTENTION

L'utilisation de procédures ou réglages différents de ceux donnés ici peut entrainer une dangereuse exposition à lumière laser visible.

Le produit utilise une diode laser. Aucun dommage aux yeux humains n'a été constaté à la suite d'une exposition au rayon laser. Eviter de regarder fixement le rayon, comme toute autre source lumineuse intense telle que le soleil. Eviter aussi de diriger le rayon vers les yeux d'un observateur, même à travers des surfaces réfléchissantes (miroirs, par exemple).

Español

Las informaciones siguientes son presentadas en conformidad con las disposiciones de las autoridades internacionales y se refieren al uso correcto del terminal.

Normativas Estándar para la Seguridad Láser
Este aparato resulta conforme a las normativas vigentes de seguridad láser a la fecha de producción: CDRH 21 CFR 1040 y IEC 825-1.

No es necesario abrir el aparato para la instalación, la utilización o la manutención.

ATENCIÓN

La utilización de procedimientos o regulaciones diferentes de aquellas describidas en la documentación puede causar una exposición peligrosa a la luz láser visible.

El aparato utiliza un diodo láser a baja potencia. No son notorios daños a los ojos humanos a consecuencia de una exposición de corta duración. Eviten de mirar fijo el rayo láser así como evitarían cualquiera otra fuente de luminosidad intensa, por ejemplo el sol. Además, eviten de dirigir el rayo láser hacia los ojos de un observador, también a través de superficies reflectantes como los espejos.

9. Technical Specification

Minec 4x Standard version

Display
- LCD graphic display. 8 lines with 20 characters per line when using default size characters.
- Display is backlit.
- Active viewing area: 58 mm x 38 mm.
- Pixel matrix: 240 x 160 pixels.
- Pixel size: 0.24 mm x 0.24 mm.
- Default character size: 8 x 16 pixels.

Keyboard
- 27 rubber-coated keys. One of them is a navigation key for 4 directions and is also used for scanning.
- Letters are generated by pressing two adjacent keys simultaneously.
- Keyboard is backlit.

Sound
Built-in beeper with selectable tone and time interval.

LED
Red diode indicates battery recharging. Both red and green diodes can be programmed from the application.

Clock
Real-time clock with alarm feature.

Temperature indicator
The application may use the processor converter as an approximate temperature indicator.

Size and weight
L: 225 mm (8.86´´)
W: 58 mm (2.28´´). 85 mm (3.35´´) over display
H: 25 mm (0.98´´). 45 mm (1.77´´) over display
Weight: 310 grams (11 oz) incl. battery

Operating temperature
-20°C (-4°F) to +55°C (+131°F)

Storage temperature
-30°C (-22°F) to +60°C (+140°F)

CPU
NEC VR4181 microprocessor (66 MHz), Mips architecture.

Memory
- SDRAM 16 MB for data and executing area. Data is saved as back-up continuously in Flash memory by default. Retains data for about 3 years.
- FLASH memory 16 MB for data and operating system. It can be erased and reprogrammed in the Minec 4x.
- Optional memory extension by CompactFlash card.

Operating system
The Minec 4x operating systems are either Linux version 2.4.0 or Windows CE version 3.0.

Power Supply
- Rechargeable Li-ION battery 3.7 V, 1.8 Ah. Battery type Celltech 365-8007. (2.5 Ah optionally)
- About 1 week operation at normal 8h/day usage, but it depends on the application. RadioLAN or GSM applications shorten the operational time.
- Supplied charger will recharge an empty battery in 3 hours via the cradle or charger directly.
- Power consumption 2 mA when Minec 4x is turned off. Battery then lasts at least 30 days.
- Multistage “battery low” indication system.

Communication
- Built-in IrDA for communication with Docking Cradle or printer. Selectable transfer speed, default is 115,200 bps. Hardware conforms to IrFYS. Software supports IrCOM 1.0 and IrNet.
- Optional GSM/GPRS functionality.
- Hirose 6-pin connector (HR30-6R-6P) as an option on the module for RS232 communication via a cable. Selectable transfer speed (2,400-115,200 bps).

A slot for Compact Flash type I or II is available for:
- RadioLAN (802.11B)
- Bluetooth

Accessories
- Docking Cradle with a RS232 port and optionally also a USB port. Several USB-cradles can be connected in series via a hub. The cradle communicates wirelessly via IrDA with the Minec 4x. Battery will be recharged when placed in the cradle.
- A printer or modem that communicates via IrDA or RS232 can be connected to the Minec 4x´s RS232 port, IrDA sensor or the RS232 port on the Docking Cradle.

Other
- Withstands drop from 1.2 m (4´) onto concrete
- Fulfils IP64 standard; moisture and particle resistance, except in connector compartment.
- LVD: EN60950, LVD directive 73/23/EEC
- EMC directive 89/336/EEC
- FCC part 15 class B,
- R&TTE directive 1999/5/EC
- Laser: CDRH/IEC Class II
- GSM: CTR 19(09/98) 4.Ed; CTR 20(09/98) 2.Ed; CTR 31(09/98) 2.Ed; CTR 32(09/98) 2.Ed

SOFTWARE

Application development
Application programs for Minec 4x can be developed in C++ or Visual Basic for Windows CE or in C++ for Linux.

Communication
Programs for Minec 4x-PC communication are available.

Minec 4x Laser

Light Source
Visible laser diode, 670 +/-10 nm

Optical Resolution
Element width minimum 0.154 mm

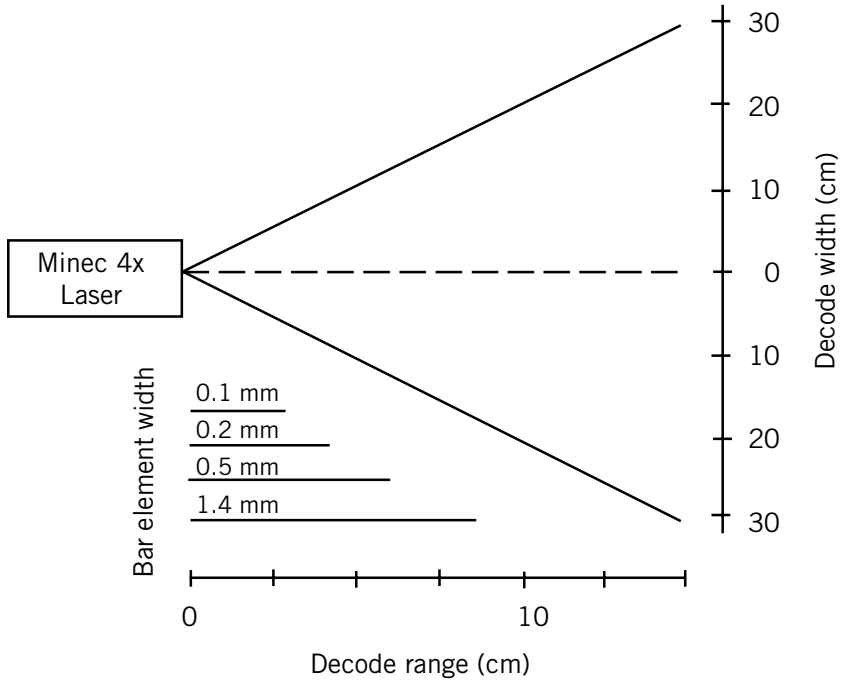
Ambient Light
Artificial: 1600 lux
Sunlight: 86000 lux via indirect exposure

Scan Rate
36 +/-3 scans/sec

Minimum Print Contrast
25% absolute dark/light reflectance at 670 nm

Orientational Tolerance
Pitch +/-55° minimum
Skew +/- 65° minimum

Size and Weight
Length, height and width as Minec 4x Standard
Weight: 360 grams (13 oz) incl. battery



Other resolutions and ranges are available.

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